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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/582,013

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31780

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10/29/2009

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EXAMINER

NGUYEN, HUNG D

ART UNIT

PAPER NUMBER

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/582,013	<b>Applicant(s)</b> TANAKA ET AL.	
	<b>Examiner</b> HUNG NGUYEN	<b>Art Unit</b> 3742	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 August 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 1-8 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 10,13,15 and 19 is/are allowed.
- 6) ☒ Claim(s) 9,11,12 and 14-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 6/7/06 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/7/06, 4/4/08, 7/9/09</u> .                                  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Species III (Figs. 4-5; Claims 9-13) and new claims 14-21 have been added in the reply filed on 8/10/2009 is acknowledged. Non-elected claims 1-8 are withdrawn from consideration. Thus, claims 9-21 are presently pending in this application.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 17 and 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The term "the second convex spherical lens is rotate 90° from the convex spherical lens" recited in claims 17 and 21, contains new matter which was not described in the specification at the time the application was filed. Clarification or cancel the claims are required.

***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 14 and 18 is rejected under 35 U.S.C. 102(b) as being anticipated by Doi et al. (US Pub. 2003/0150843).

6. Regarding claims 14 and 18, Doi et al. discloses a method for fabricating a semiconductor device comprising: forming a semiconductor film 10 (Fig. 6) over a substrate 11 (Fig. 6); blocking a low-intensity part of a laser beam emitted from a laser oscillator 1 (Fig. 6) by making the laser beam pass through a slit 5 (Fig. 6); and projecting an image formed at the slit to an irradiation surface of the semiconductor film by a convex spherical lens 6 (Fig. 6); wherein the laser beam is shaped into a linear beam on the irradiation surface.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (US Pub. 2001/0046088) in view of Sercel et al. (US Pub. 2004/0228004).

9. Regarding claims 9 and 11, Sano et al. discloses a laser irradiation method comprising: bending a laser beam 102 (Fig. 7) emitted from a laser oscillator 101 (Fig. 7) by a mirror 114 (Fig. 7) tilted by a predetermined angle; making the laser beam pass through a first convex lens 104 (Fig. 7) so as to form a linear beam due to astigmatism; blocking a low-intensity part of the linear beam by a slit 105 (Fig. 7); and projecting to an irradiation surface an image of the linear beam at the slit by using a second convex lens 106 (Fig. 7); wherein the laser beam is shaped into a linear beam except for the lens are spherical lens. Sercel et al. discloses a lens 18 (Fig. 1) is spherical convex lens. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Sano et al. to have a spherical convex lens, as taught by Sercel et al., for the purpose of adjusting the energy density at the target without affecting laser output power (Abstract).

10. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (US Pub. 2001/0046088) in view of Sercel et al. (US Pub. 2004/0228004) and Taniguchi (JP 10-286683).

11. Regarding claim 12, Sano et al. discloses a laser irradiation apparatus comprising: a laser oscillator 101 (Fig. 7); a mirror 114 (Fig. 7) tilted by a predetermined angle for guiding a laser beam emitted from the laser oscillator to a first convex lens 104 (Fig. 7); the first convex lens for shaping the laser beam reflected on the mirror into a linear beam due to astigmatism; a slit 105 (Fig. 7) for blocking a low-intensity part of the

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linear beam; and a second convex lens 106 (Fig. 7) for projecting to an irradiation surface an image of the linear beam at the slit.

Sano et al. fails to show a lens is a spherical and wherein the slit, the second convex spherical lens, and the irradiation surface are arranged so that a distance (M1) between the slit and the second convex spherical lens and a distance (M2) between the second convex spherical lens and the irradiation surface satisfy equations 1 and 2:

$$M1 = f(s+D)/D \text{ [Equation 1]}$$

$$M2 = f(s+D)/s \text{ [Equation 2]}$$

where s is a width of the slit, D is a length of the linear beam in the long-side direction, and f is a focal length of the second convex spherical lens.

Sercel et al. discloses a lens 18 (Fig. 1) is spherical convex lens.

Taniguchi discloses a lens 4 (Fig. 1) are adjustable in the vertical axis with respect to the workpiece 5 (Fig. 1). Taniguchi also discloses the measure distance between the slit 3 (Fig. 1) to the lens 4 (Fig. 1) and the lens 4 (Fig. 1) to the workpiece 5 (Fig. 1) (Par.5-6).

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Sano et al. to have a spherical convex lens and wherein the slit, the second convex spherical lens, and the irradiation surface are arranged so that a distance (M1) between the slit and the second convex spherical lens and a distance (M2) between the second convex spherical lens and the irradiation surface satisfy equations 1 and 2:

$$M1 = f(s+D)/D \text{ [Equation 1]}$$

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$$M2=f(s+D)/s \text{ [Equation 2]}$$

where s is a width of the slit, D is a length of the linear beam in the long-side direction, and f is a focal length of the second convex spherical lens, as taught by Sercel et al. and Tanaguchi, for the purpose of controlling/reducing the projection of the laser light to the workpiece.

12. Claims 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doi et al. (US Pub. 2003/0150843) in view of Sano et al. (US Pub. 2001/0046088).

13. Regarding claims 16 and 20, Doi et al. discloses substantially all features of the claimed invention as set forth above except for a mirror for bending a traveling direction of the laser beam by a predetermined angle is provided between the laser oscillator and the slit. Sano et al. discloses a mirror 114 (Fig. 7) for bending a traveling direction of the laser beam 102 (Fig. 7) by a predetermined angle is provided between the laser oscillator 101 (Fig. 7) and the slit 105 (Fig. 7). It would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize in Doi et al. to have a mirror for bending a traveling direction of the laser beam by a predetermined angle is provided between the laser oscillator and the slit, as taught by Sano et al., for the purpose of having a larger angular of dispersion and also having an advantage in the case where a narrower band width exposure light is desired.

***Allowable Subject Matter***

14. Claims 10, 13, 15 and 19 are allowed.

15. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record does not show or suggest a laser irradiation method wherein the slit, the second convex spherical lens, and the irradiation surface are arranged so that a distance (M1) between the slit and the second convex spherical lens and a distance (M2) between the second convex spherical lens and the irradiation surface satisfy equations 1 and 2:

$$M1 = f(s+D)/D \text{ [Equation 1]}$$

$$M2 = f(s+D)/s \text{ [Equation 2]}$$

where s is a width of the slit, D is a length of the linear beam in the long-side direction, and f is a focal length of the second convex spherical lens recited in claim 10, 13, 15 and 19.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG NGUYEN whose telephone number is (571)270-7828. The examiner can normally be reached on Monday-Friday, 9M-6PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tu Hoang can be reached on (571)272-4780. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HUNG NGUYEN/  
Examiner, Art Unit 3742  
10/19/2009

/TU B HOANG/  
Supervisory Patent Examiner, Art Unit 3742